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17

STATISTICAL AND PATHOLOGICAL REPORT

OF THE

CASES OF FEVER

TREATED IN THE

ROYAL INFIRMARY OF EDINBURGH IN THE YEAR ENDING
SEPTEMBER 30, 1842.

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(Extracted from the Lond. and Edin. Monthly Journal for May 1843.)

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STATISTICAL AND PATHOLOGICAL REPORT, &c.

(Read before the Royal Medical Society of Edinburgh.)

During the period over which this Report extends, there were treated in the Royal Infirmary, 820 cases of fever; this number being less by 453 than that of the previous year, showing a great decline in the prevalence of the epidemic.

The following, taken from the last series of statistical tables, exhibits the admissions and fatality of fever during each month of the year, with the relative proportion of the two sexes.

Months.	Total cases of fever and febriculæ.	Males.	Females.	Died.		Febriculæ.		Mortality per cent.	
				Males.	Females.	Males.	Females.	Males.	Females.
October 1841.	85	40	45	13	7	1	1		
November „	99	52	47	9	1	1	4		
December „	83	44	39	6	5	1	1		
January 1842.	69	40	29	10	3	2	3		
February „	83	43	40	3	5	5	3		
March „	66	34	32	7	5	6	2		
April „	62	32	30	3	3	1	6		
May „	76	29	47	6	5	2	3		
June „	56	20	36	3	5	1	...		
July „	55	25	30	4	4	1	3		
August „	38	23	15	2	...	4	5		
September „	48	22	26	3	2	2	4		
	820	404	416	69	45	27	35	17·07	10·81

The mortality in the total number of cases treated was, it will be observed, 13·9 per cent. or 1 death in $7\frac{1}{3}$ th cases; and in males exceeded, as is usual, that in females in the proportion of 17·07 to 10·81 or as 1 death in $6\frac{1}{9}$ th to 1 in $9\frac{1}{11}$ th cases.

Influence of Season.—In the following table the admissions and deaths for the last three years as given in the two Statistical Reports, are condensed and compared with the mean temperature of each month, and the fall of rain, with a view to ascertain the influence of the weather, and of season, on the prevalence of the disease. For the meteorological observations I am indebted to Mr Adie, from whose Register they are taken.

T A B L E
Showing the Admissions of Fever Cases, and the Proportions of Deaths during each Month of the Years 1840, 41, and 42, with the Mean Temperature and Fall of Rain, from observations made at Canaan Cottage, 1½ miles to the South of Edinburgh.

1839-40.					1840-41.					1841-42.					TOTAL.				
Months.	Cases.	Deaths.	Temper- ature.	Rain.	Cases.	Deaths.	Temper- ature.	Rain.	Cases.	Deaths.	Temper- ature.	Rain.	Total cases.	Total deaths.	Admis- sion per cent.	Deaths per cent.	Mean temper- ature.	Mean fall of rain.	
October.....	48	8	47.69	2.38	64	8	46.03	2.01	85	20	43.48	4.13	197	36	6.73	18.2	45.73	2.84	
November..	66	7	42.23	1.65	77	8	41.68	2.33	99	10	39.10	2.28	242	25	8.23	10.3	41.00	2.08	
December...	69	14	38.18	1.66	118	23	36.26	.68	83	11	39.65	1.96	270	48	9.22	17.7	38.03	1.43	
January....	71	5	39.40	3.72	165	25	33.44	1.23	69	13	35.45	1.01	305	43	10.42	14.0	36.09	1.98	
February....	68	9	37.44	1.58	146	20	37.87	1.64	83	8	39.55	1.11	297	37	10.15	12.4	38.28	1.44	
March.....	75	5	41.14	.43	107	15	44.48	.58	66	12	42.04	2.44	248	32	8.47	12.9	42.55	1.15	
April.....	67	12	48.36	.19	93	11	45.34	1.14	62	6	45.03	.15	222	29	7.58	13.0	46.24	.49	
May.....	83	12	48.19	3.97	102	17	52.03	1.14	76	11	51.22	1.45	261	40	8.92	15.3	50.48	2.18	
June.....	80	11	55.12	2.51	100	14	53.87	1.55	56	8	55.84	.97	236	33	8.06	13.9	54.94	1.67	
July.....	79	7	55.95	3.46	116	21	56.38	3.87	55	8	56.74	1.53	250	36	8.54	14.4	56.35	2.95	
August.....	62	12	59.13	1.99	93	14	57.25	4.69	38	2	59.14	1.36	193	28	6.59	14.5	58.50	2.68	
September..	65	4	53.90	2.39	92	10	54.69	2.63	48	5	53.55	1.45	205	19	7.00	9.2	54.04	2.15	
	833	106	47.22	2.16	1273	186	46.61	1.95	820	114	46.73	1.65	2926	406					
		12.72	Mean.			14.61	Mean.			13.90	Mean.			13.8	per cent.				
		per cent.				per cent.				per cent.				or one death in 7½th cases nearly.					

The feature which first attracts attention in this table, is the great similarity both as to temperature and humidity between the three years which it includes, notwithstanding the difference displayed in the prevalence and fatality of the epidemic. Though the number of cases included is too small to allow of our drawing any very definite conclusions—the influence of season on the diffusion of fever seems very slight. The largest number of cases, 1584, or 54 per cent. of the whole, occurred, however, during the months of November, December, January, February, March, and April, and it would appear that a low temperature conduces more than humidity to the spread of the disease,—the temperature during this period having averaged $40\cdot36^{\circ}$, and the fall of rain having been 8·57 inches; while of the other six months the mean temperature was 54° , and the amount of rain 14·47 inches. The greatest number of admissions of fever took place during the cold and dry months of December, January, and February, and the least number in the warm and comparatively moist months of August, September, and October. The epidemic seems to have been at its height in December 1840, and January and February 1841, when there existed a lower average temperature than during the corresponding period of either of the other years. Moisture would appear to exercise little influence in the spread of the disease; the months of July, August, September, and October 1841, display a remarkable degree of humidity, 15·32 inches of rain having fallen during this period, yet the admissions of fever cases were only 386, and the epidemic underwent a gradual decline; while, during the four months commencing December 1840, in which the weather was dry, only 4·13 inches of rain having fallen, there occurred 536 cases. While, however, the above table tends to the general conclusion that cold is more conducive to the spread of fever than humidity, it affords abundant evidence that the prevalence of the epidemic is dependent on causes distinct from any meteorological changes with which we are at present acquainted; the admissions of the disease having been as numerous, with very different degrees of heat and moisture, and varying very greatly in periods marked by similar atmospheric conditions.

Influence of the Period of the Epidemic on the Rate of Mortality.—The last column of the table, which gives the mean mortality of each month, shows the very great variation which may occur in the disease from accidental circumstances, and confirms our everyday experience of the erroneous views which result from conclusions founded on a small number of cases and a limited period of observation. The rate of mortality seems indeed to follow the law which obtains in other diseases, having been greatest at the commencement and height of the epidemic, and declining with its gradual cessation; thus it will be seen that while in 1841 the total

number of cases treated was 1273, and the deaths 186, or 14·61 per cent.; during the last year, the cases have been only 820, and the mortality 13·9 per cent. This becomes more obvious if we compare the admissions and mortality during the six months commencing October 1840, with the same period of 1841, the cases in the former having amounted to 606, and the mortality to 14·3, and in the latter the cases having been only 235, and the mortality 11·9 per cent. The contrast is still greater between the cases treated during the latter period, and the first six months of the epidemic, viz. from December 1840 to April 1841, in which period the mortality reached the very high general average of 15·4 per cent. From the following table, in which is given the proportion of the fever cases to the whole number of admissions during each quarter of the last year, the gradual decline of the epidemic, and its corresponding decrease in fatality, is apparent.

	FIRST QUARTER. October, November, and Decem- ber 1841.	SECOND QUARTER. January, February, and March 1842.	THIRD QUARTER. April, May, and June 1842.	FOURTH QUARTER. July, Au- gust, and September 1842.
Total cases admitted,.....	970	941	816	816
Cases of fever,.....	267	218	194	141
Ratio per cent. of fever cases to total admissions,.....	27·5	23·1	23·7	17·2
Deaths from fever,.....	41	33	25	15
Mortality per cent. of fever cases,.....	15·35	15·13	12·88	10·63

This table also shows the very large proportion which the fever cases bear to the whole of those admitted. The mortality from fever constitutes a somewhat larger proportion of the total mortality; 114 out of the 443 deaths being from this disease, or 25·7 per cent.

Influence of Age and Sex.—The following table exhibits the distribution of the patients according to age and sex, and the results at the different periods of life.

Age.	Total cases of fever and febri- culæ.	Cured.	Died.	Average mortality.	Morta- lity per cent.	MALES.				FEMALES.			
						Total.	Cured.	Died.	Febri- culæ.	Total.	Cured.	Died.	Febri- culæ.
1 to 5	37	36	1	1 in 37	2·70	19	18	1	1	18	18	..	4
5 to 10	71	69	2	1 in 35½	2·81	42	41	1	5	29	28	1	5
10 to 15	100	94	6	1 in 16⅔	6·00	48	45	3	2	52	49	3	3
15 to 20	153	144	9	1 in 17⅓	5·88	71	65	6	5	82	79	3	15
20 to 30	204	176	28	1 in 7⅓	13·72	95	80	15	6	109	96	13	4
30 to 40	138	114	24	1 in 5¾	17·39	60	49	11	4	78	65	13	2
40 to 50	73	51	22	1 in 3⅓	30·13	42	24	18	1	31	27	4	1
50 to 60	31	19	12	1 in 2½	38·70	17	11	6	2	14	8	6	1
60 to 70	9	1	8	1 in 1⅓	88·88	7	..	7	..	2	1	1	..
70 to 80	2	..	2	1 in 1	100·00	1	..	1	..	1	..	1	..
Not stated.	2	2	..	..	..	2	2	..	1	..	..	..	..
	820	706	114	1 in 7¼ nearly.	13·90	404	335	69	27	416	371	45	35

This table affords only approximative information as to the liability to fever at different periods of life, and in the two sexes; to obtain correct results it would be necessary to ascertain the proportions of each class in the general population at the time the observations were made, and to inquire whether from different causes a larger proportion of one class may not come under treatment than of another. Thus, it would appear from the small number treated, that children are less liable to fever than adults; on comparison, however, of the admissions of fever with those of all other classes of disease at different ages, we obtain a very opposite result.

Ages.	Total cases of medical or surgical disease. ¹	Cases of fever.	Ratio per cent. of fever to general admissions.
1 to 5	81	37	45·6
5 to 10	130	71	54·6
10 to 15	190	100	52·6
15 to 20	508	153	30·1
20 to 30	898	204	22·7
30 to 40	607	138	22·7
40 to 50	383	73	19·0
50 to 60	210	31	14·7
60 to 70	85	9	10·5
70 to 80	17	2	11·7

Thus, it would appear, that in proportion to the admissions at each age, the largest number of fever patients are in early life; the proportion in children is, however, so great, as to render it probable, that from the contagious nature of the disease, a disproportionate number are sent to the hospital; from early life, the susceptibility to the disease would appear gradually to decline, till, after the age of 40, its attacks become rare.

In reference to the fatality of fever at different periods of life, the tables afford more precise information; and it will be observed that the mortality is in inverse proportion to the susceptibility to the disease, being low in infancy, when the liability to fever is great, and gradually increasing with the decreasing susceptibility, till after the age of 60, when attacks are comparatively infrequent, the chances of recovery become very small, 10 out of the 11 cases in persons above that age having proved fatal.

Trades and Occupations of Fever Patients.—The following displays the trades and occupations of the adult patients admitted during the course of the last year:—

¹ Accidents are excluded from this table.

MALES.

Labourers,	37	Upholsterers,	3	Dyer,	1
Railway ditto,	10	Engravers and copper-		Corkeutter,	2
Shoemakers,	20	plate printers,	3	Gentlemen's servants,	3
Cabinetmakers and		Writers' clerks, &c.,	7	Miller,	2
wrights,	17	Potter,	1	Glasseutter and Blower,	2
Tailors,	12	Golf-ball maker,	1	Currier,	1
Porters,	14	Policemen,	2	Bakers,	3
Sailors,	11	Flax-spinner,	1	Ropemaker,	1
Painters,	10	Bookbinders,	4	Parchmentmaker,	1
Carters,	9	Coopers,	3	Plumber,	1
Blacksmiths,	9	Type-founders,	2	Coachman,	1
Grooms,	8	Quarryman,	1	Soapboiler,	1
Hawkers,	7	Nailer,	1	Rag-sorter,	1
Masons,	5	Combmakers,	4	Coach-builder,	1
Weavers,	6	Sawyers,	3	Maltster,	1
Printers,	5	Fleshers,	3	Engineer of steam-boat,	1
Gardeners,	5	Skinners,	2	Fishing-tackle maker,	1
Working jewellers,	5	Shopmen,	4	Image-maker,	1
Brass and iron founders,	6	Dairyman,	1	Actor,	1
Harness-makers,	5				

FEMALES.

Hawkers on the streets,	7	Shoebinders,	7	Small shopkeeper	1
Washerwomen,	7	Fishwomen,	3	Servants,	71
Field labourers,	11	Laundress,	1	Wives of labourers,	44
Bookfolders,	11	Fancy-box maker,	1	Wives of artizans,	41
Sempstresses,	11	Combmaker,	1	Other married women,	14
Factory girls,	7	Lodging-housekeeper,	1	Having no occupation,	4

The value of the above table is lessened by the absence of any means of comparison with the numbers of each description of persons living at the time included in the report; and it is further evident, that of the better class of artizans but few apply for admission. The only point of interest is the circumstance, that three fleshers and two skinners, trades which have been supposed to grant immunity from the attacks of contagious fever, are included in the list of those who suffered from the disease.

Residence.—In Table 5th, extracted from the statistical report, the residence of the patients is given.

	Total cases.	Deaths.	Mortality per cent.
Patients admitted from Edinburgh,.....	582	82	14·51
... .. Leith,.....	114	19	
... .. the adjacent district,.....	47	7	
... .. who had arrived immediately before admission from distant parts of the country,.....	28	5	10·61
... .. who had no fixed residence, and were travelling from place to place in search of employment, ..	38	0	
... .. whose exact residence is not stated,...	5	1	
... .. who took fever in the wards,.....	6	0	
	820	114	

Though in the course of the last year fewer instances have occurred of fever being taken by the nurses or other attendants on the sick than in seasons in which the disease has prevailed more extensively, sufficient evidence has been afforded of its contagious nature. Of the six persons reported in the table as having taken fever in the institution, four were nurses in the fever wards; the fifth was the porter of the laboratory, whose duty it is to shave the heads of the fever patients; and the sixth was the porter at the Surgical Hospital, who, though not ordinarily exposed to the influence of contagion, may yet readily have contracted the disease. Of the resident medical officers two had attacks of fever, and one died; and two cases occurred in non-resident clerks, of which one proved fatal.

Of the 582 patients admitted from Edinburgh, 68 are stated to have been resident in the city for various periods under three years. The number of those who had newly arrived must however have been greater than is here given, as in cases of children; and in those in an advanced stage of the disease the collection of correct histories is extremely difficult. Of the patients taking fever in Edinburgh, 493, or 84·7 per cent were admitted from the Old Town. 66 persons arrived ill of fever in the town, and in few of these could the exact locality where the disease had been contracted be ascertained. The number of this class of patients is important, since as most had spent one or more nights in the common lodging-houses, it is evident, when the condition of these houses is taken into consideration, that a large amount of disease may have been occasioned by the contagion thus imported. During twelve months, I found, that of 67 cases of fever admitted into the Chester Infirmary, 23 were received from the lodging-houses frequented by vagrants, and 15 others from houses occasionally receiving travellers, or situated in their immediate neighbourhood.

The fatality of the cases of fever from Edinburgh and Leith exceeded, it will be observed from the above table, that of the cases admitted from the neighbouring district, or in those who came into the town labouring under the disease, in the proportion of 14·51 to 10·61. It must, however, be borne in mind, that the number of the latter cases, 113, is too small to afford a trust-worthy average; and that as of these a large proportion were persons having no houses in Edinburgh, it is probable that they might apply for and obtain admission for slight attacks, for which they would not otherwise have been received.

Duration of the Disease.—The mean period of residence in the Institution, of the cases which were cured, was 32 days,¹ and as it was found that the patients were, on the average, admitted on

¹ 31·3, Statistical Tables 1842.

the eighth day¹ of the disease, the mean duration of the attack may be inferred to have been from 20 to 25 days. The many extraneous causes which may influence the period during which patients are detained in hospital, precludes the possibility of instituting, from the ordinary records, any inquiry as to the relative duration of the disease at the different periods of life.

Period of Death.—The mean period of death was in males² the 13th; in females³ the 14th day.

Of the Males 1 died on the 6th day from seizure.

„	1	„	7th	„
„	3	„	8th	„
„	6	„	9th	„
„	5	„	10th	„
„	6	„	11th	„
„	8	„	12th	„
„	8	„	13th	„
„	5	„	14th	„
„	5	„	15th	„
„	3	„	16th	„
„	2	„	17th	„
„	1	„	18th	„
„	2	„	19th	„
„	1	„	20th	„
„	2	„	21st	„
„	1	„	23d	„

7 patients, the duration of whose attacks was not known, died in the 2d, 5th, 7th, 7th, 8th, 9th, and 18th day from admission.

Of the Females 1 died on the 6th day from seizure.

„	2	„	7th	„
„	4	„	9th	„
„	4	„	10th	„
„	2	„	11th	„
„	7	„	12th	„
„	5	„	13th	„
„	3	„	14th	„
„	1	„	15th	„
„	2	„	16th	„
„	3	„	17th	„
„	2	„	18th	„
„	2	„	19th	„
„	2	„	20th	„
„	1	„	22d	„

One female died on the 6th day from admission, the period of whose seizure was not known.

Excluding the latter cases, 78 out of the 101 proved fatal between the 9th and 17th days, being 68·4 per cent. or nearly two-thirds.

One male died on the 31st day from admission, of pneumonia, appearing during convalescence; a second, a foreign sailor, was admitted with an attack of fever, characterised by abdominal symptoms, from which he recovered so far as to be on the point of leaving the institution, when he was seized with fever, attended by eruption on the skin, and died on the 7th day from the reappearance of the symptoms, and the 75th from admission.

Three females died of diseases supervening on attacks of fever, on the 27th, the 68th, and 96th days from admission. In the first of these cases there existed pneumonia; in the second uterine disease; and in the last dropsical symptoms made their appearance after established convalescence. In none of these cases was dissection of the bodies permitted.

APPEARANCES OBSERVED AFTER DEATH.

Of the total number of cases proving fatal, 31 were examined after death; of these 20 were males and 11 females. Two cases, which died shortly after admission, and in which the duration of the disease was not ascertained, being deducted from the calculation, the mean period of death of the remaining 29 was 12·4 days.

¹ 7·31.

² 12·93.

³ 13·24.

Of the whole number of cases, 20 are stated to have been attended with a more or less copious typhoid eruption, and in two, throughout the course of which it was carefully looked for, no eruption appeared; two died very shortly after admission, and before any reports were taken of the cases—and in the remaining five, no mention is made in the journals of the eruption having been present. In drawing up the following report of the examinations of these cases, I have endeavoured to follow the arrangement adopted by Dr Reid, in his report of a much larger number of observations, previously published,¹ since results become valuable, in proportion to the number of cases on which they are based, and the facility with which they admit of comparison with the observations of others.²

In the Head.—Of the total number of cases, the brain was examined in 24. The usual means adopted of ascertaining the condition of this organ is by observations of the amount of fluid extravasated in the subarachnoid cellular tissue, in the ventricles, or at the base, together with the relative firmness of the substance of the brain, and the degree of congestion in its vessels or those of the pia mater.

On reviewing the reports on these points, I find that there existed

No serum beneath the arachnoid, or the effusion, if present, was in very small quantity, in 15 cases, of whom the mean age was 30·9, the eldest being 44, the youngest 11.

	Mean age.	Eldest.	Youngest.
The subarachnoid effusion was in moderate quantity in 6 cases,	38·8	51	28
The subarachnoid effusion was copious, elevating the membrane above the level of the convolutions in 2 „	44	52	36
The fluid in the ventricles was under ζ_{ss} in 6 cases, of whom the mean age was 30·5			
„ „ ζ_i in 5 „			28·6
„ „ $\zeta_{i\frac{1}{2}}$ in 3 „			37·6
„ „ ζ_{ii} in 3 „			41·3
„ „ ζ_{iii} in 2 „			44
„ „ ζ_{ss} in 1 „			42
„ „ ζ_{vi} in 1 „			41
„ „ $\zeta_{i\frac{1}{2}}$ in 1 „			23
„ „ ζ_{ii} in 1 „			28
The precise quantity is not stated in . 1			
The fluid at the base was in small quantity in 1 case.			
„ „ „ „ „ „ „ „ „ 3 „			
The vessels of the pia mater were unusually tinged with blood in . . . 8 „			
Much congestion of the substance of the brain was displayed on section in 6 „			
Neither the brain nor its membranes displayed unusual vascularity in . 10 „			
The substance of the brain was of ordinary firmness in 18 „			
The whole brain was soft in 1 „			
The fornix and parts around the ventricles were soft in 1 „			

¹ Edinburgh Medical and Surgical Journal, vol. lii. Edinburgh and London Monthly Journal for August 1842.

² The publication of a report of so small a number of cases, after the numerous observations of Dr Reid, may require some explanation. It may be stated that this report was compiled without a view to publication, and was only committed to the press at the suggestion of some of the members of the Society before which it was read.

It is well known that the amount of fluid contained in the ventricles or in the sub-arachnoid cellular tissue, affords alone no indication of any recent diseased process having been in progress; few persons dying in advanced life, or of chronic diseases, in whom a larger or smaller quantity of serum is not found in these situations. It becomes, therefore, necessary to ascertain whether, in the cases in which the fluid was copious, its presence might not be ascribed rather to a slow change in the condition of the cranial contents, than to the disease producing death.

From the above table, it will be observed that the mean age of the two persons, in whom the sub-arachnoid effusion was copious, was 44,—the ages being 52 and 36; of those in whom the effusion was in moderate quantity, the mean age was 38·8,—and the eldest 51, the youngest 28; of those in whom there existed no sub-arachnoid effusion, or in whom it was very small in amount, the mean age was 30·9,—the eldest being 44, the youngest 11. Of the four patients, in whom the quantity of fluid in the ventricles was largest, viz., $\bar{3}ii$, $\bar{3}iss$, $\bar{3}vi$, and $\bar{3}ss$, the ages were respectively 28, 23, 41, and 42; and the mean age of the six, in whom there was found above $\bar{3}iii$ —37; while, of the other 17, in whom not more than $\bar{3}ii$ of fluid was contained in the ventricles, the mean age was 33. The oldest person in whom the brain was examined was 52 years of age, and though in this case there existed copious sub-arachnoid effusion, the fluid in the ventricles did not exceed $\bar{3}iii$. It would, therefore, appear that the mean age of those in whom the sub-arachnoid effusion was copious, was somewhat greater than of those in whom it was moderate and small in quantity; the difference is, however, too small and liable to too many exceptions in individual cases, to afford a sufficient explanation of the presence of the fluid, while the age of the patients bears no relation to the amount of fluid in the ventricles. The whole, indeed, of those in whom the brain was examined were at too early a period of life for any material amount of fluid to be ascribed to changes taking place in the condition of that organ, from the advance of life, and independent of actual disease. It remains to inquire how far the amount of fluid and the state of congestion corresponded with, and are explanatory of the morbid phenomena present during life.

Connection of the Morbid Appearances in the Brain, with the Symptoms observed during Life.—1st, In the case in which the lateral ventricles were found to contain $\bar{3}ii$ of fluid, the patient, a male of 28 years of age, was admitted on the 7th day after seizure; on admission the febrile eruption was found on the skin; he complained of pain in the head, though not very severe; his skin was dry but not hot; the eyes were suffused; the face flushed; and the tongue furred. On the 9th day

he had slight delirium, which, on the 11th, became so active as to require restraint; leeches were applied to the temples, and cold to the head, and brisk purgatives given. In three days he became more calm, the delirium, however, recurring occasionally. He became comatose, and died on the 19th day.

The arachnoid was slightly elevated above the convolutions by serum; the large venous trunks on the hemispheres of the brain displayed some congestion; the brain was generally firm, but especially around the distended ventricles, and its substance was free from any unusual vascularity. The membranes at the base were slightly adherent from old disease.

2d, In the case where 3iss. of serum was found in the ventricles, the patient, a female, was admitted on the 13th day of the disease. She complained of severe frontal headache, sense of weight in the head, and pain in the back, and moaned incessantly. The abdomen was tumid, but not tender; the skin hot, with a few faint petechiæ on the chest; she had urgent thirst, and a foul tongue; eight leeches were applied to the temples, and cold to the head, and purgative given, and the following day a blister was applied to the nape of the neck. The pain in the head was much relieved by these means, but on the 16th day it recurred, on the 17th she was restless and delirious at night, and a blister was directed to be placed on the head, and purgatives prescribed; on the 18th, only a scanty evacuation had been obtained; the headache was increased; the eyes were suffused, and the pupils dilated; she had constant moaning, with occasional screaming; the following day she was easier, but the moaning and screaming recurred on the 19th; on the early part of the night of the 20th, she was very delirious, after which she slept naturally for an hour or two; on awaking, she moaned for a short time, became insensible, breathed stertorously, and died on the morning of the 21st day.

The sub-arachnoid effusion was slight, nor did there exist any increased turgescence of the vessels of the brain or its membranes; the substance of the brain around the distended ventricles was softer than natural; half an ounce of fluid was collected from the base of the skull. The softening of the central portions of the brain was probably the result of the infiltration of the effused fluid into the cerebral substance after death; the colour was not altered; I may add, that I have seen the same softening in several cases of disease where much fluid was effused; the cerebral substance is occasionally quite pultaceous, and the adjacent parts have an œdematous appearance; the colour is in no degree altered, nor does the softened tissue examined under the microscope display any abnormal appearance; in none of these cases was any paralytic symptom present during life. It afterwards appeared that, in the above case, the patient had received a blow on the

head before her seizure, and some puffiness of the integuments was found, on admission, over the left eye.

3d, In the case in which zvi. of fluid were found in the ventricles, the patient, a man of very intemperate habits, 41 years of age, was admitted on the 5th day of fever, he complained of pain and weight in the head, and prostration of strength; the tongue was brown and dry; the pulse 100, and soft; the bowels had been relieved by medicine; the eruption was beginning to appear on the skin. Two days after, the pulse was slow and weak, and the surface cold; he had slight subsultus tendinum, with contraction of the pupils, and muttering delirium lapsing into coma, and he died on the 10th day. In addition to the large amount of fluid in the ventricles, no marked change was apparent in the brain; there was little or no increased vascularity; very slight sub-arachnoid effusion, and very little fluid at the base.

4th, The case where zss. of fluid was found in the ventricles, was characterized by great restlessness and irritation, torpor and coma; the patient, a male, 42 years of age, died on the 8th day. The brain was firm, but on section, more blood exuded than usual; the sub-arachnoid effusion was in small quantity.

5th, In the case of a female, 52 years of age, who had been seized with the disease in the Infirmary, there was great pain in the head, moaning; delirium at first high, then low muttering, and lastly coma; she died on the 14th day. The red dots were more numerous than usual, but the substance of the brain was firm; there were found ziii. of fluid in the lateral ventricles, much sub-arachnoid effusion, and a thin layer of coagulated blood lining the arachnoid on the dura matter over the hemispheres and at the base.

6th, In a man, 36 years of age, who died on the 11th day, there was also found ziii. of fluid in the ventricles, but little or no sub-arachnoid effusion or fluid at the base; the pia mater and choroid plexus were injected, and the brain soft, though not more than usually vascular. This case was characterized during life by pain in the head, active delirium, and coma. The softness of the brain was probably from decomposition, as fifty-two hours had elapsed after death before the examination took place.

Thus far the symptoms present during life were borne out by the condition of brain after death. In the cases which follow, while the symptoms were equally well marked, the appearances after death were slight, or altogether negative.

1st, In a male, 40 years of age, who died on the 14th day of fever, characterized by subsultus tendinum, and contraction of the pupils, and terminating in convulsions, there was found little or no fluid beneath the arachnoid, in the ventricles, or at the base, the substance of the brain was firm, and there existed no other

applicable lesion than some turgescence of the cerebral vessels, with fluid blood.

2d, In a male, 34 years of age, the symptoms were pain in the head; delirium, at first slight, afterwards urgent and incessant, and lastly coma, and on examination the fluid in the ventricles did not amount to half a drachm; the subarachnoid effusion was very slight, and but little fluid was found at the base. The brain was firm, but its substance and membranes displayed some congestion.

Lastly, in 11 other cases, in which delirium was a more or less marked feature of the disease, together with subsultus tendinum, and coma, the fluid was under $\bar{3}$ ss in 2 cases,

“	“	$\bar{5}$ i in 3	“
“	“	$\bar{5}$ i $\frac{1}{2}$ in 3	“
“	“	$\bar{5}$ ii in 3	“

and no other evidences of disease were detected, with the exception of some degree of increased turgescence of the vessels in 4 cases.

On analysing the characteristic symptoms of the whole of the cases in which the brain was examined after death, I find, that in 4, in which, along with other symptoms of fever, there was present delirium, so active as to require restraint, the fluid found in the ventricles was copious in 1 case, in moderate quantity in 1, and very small in amount in the remaining 2.

In 16 cases, in which the most striking symptoms of cerebral disorder were subsultus tendinum, delirium, stupor, and coma—in 3 there was found a large amount of fluid; in 3 the quantity was moderate, and in 10 it was small.

In 1 case, in which convulsions, with subsultus tendinum, and coma, were present, the quantity was extremely small, amounting to less than half a drachm.

In 2 cases, in which the symptoms were rather those of prostration of strength, than of active disease, the quantity of fluid found in the ventricles was also small. In the above calculation, I have considered as copious all quantities of fluid exceeding 3 drachms; as moderate, quantities varying from 1 to 3 drachms; and as small, all quantities less than 1 drachm.

As regards the degree of congestion of the brain, or its membranes, in the 4 cases where active delirium was found, there was increased turgescence of the vessels of the pia mater, or congestion of the substance of the brain in 2.

In the 16 cases characterized by subsultus tendinum, delirium, stupor, and coma, the vascularity was greater than usual in 7.

In the patient who had convulsions, subsultus tendinum, and coma, the brain was unusually turgid with blood; and in the two cases in which prostration of strength formed the most marked feature, there was also congestion of the vessels.

But little importance can, however, be attached to this appearance as evidencing the existence of inflammatory action in the brain, since it is well known, that congestion of the cerebral vessels may be dependant on obstruction to the transmission of the blood through the lungs; and it is probable, that this cause may have operated in some of these cases, as I find, that of 12, in which the membranes are reported to have displayed unusual turgescence, or numerous red points exuded from the substance of the brain in section, the lungs were found

Slightly congested in	1	case,
Much congested in	10	„
And inflamed in	1	„

While of 8 cases, in which no increased vascularity was detected, the lungs were

Free from congestion in	1	case,
Slightly congested in	2	„
Much congested in	4	„
And inflamed in	1	„

showing marked derangement of the pulmonary circulation in a larger proportion of those cases in which the congestion of the brain was noticed.

In one of the above cases it is stated, that a layer of coagulated blood was found lining the arachnoid in the internal surface of the dura mater, over the hemispheres, and at the base. This occurred in a female 52 years of age, who died on the 14th day of fever taken in the institution. No laceration of any of the meningeal vessels, from which the blood had escaped, was detected. In this case Dr Bennett found exudation granules on the sides of some of the capillary vessels of the grey matter of the brain.

In 2 or 3 other cases, evidences of old cerebral disease were observed. In one, adhesions existed between the contiguous margins of the two anterior lobes of the brain; and in a second, at the base between the reflections of the arachnoid. In one case, one or two small masses of bone were found adhering to the falx major.

In conclusion, it will be apparent, that though in some of the cases the amount of fluid effused, and the degree of congestion of the cerebral vessels, corresponded with the symptoms present during life; yet that in the larger number but little relation could be observed between the appearances detected after death and the previous symptoms; the brain having been found free from any appearance which could be regarded as diseased in cases which had been characterized by disturbance of the cerebral functions during life, to as great a degree as any of those in which it exhibited the most decided morbid conditions. Microscopic examination of the cerebral structure may, indeed, afford evidence of the results of inflammatory action in cases in which

no unusual appearances are detectable on casual examination; yet the development of inflammation in the brain, or its membranes, even though of frequent occurrence during fever, can only be regarded as an accidental complication, and affords no explanation of the general phenomena.

Appearances observed in the Chest.—The Lungs.—The chest was examined in 27 cases. Of 20 of these, in which the state of the bronchi is noted,

The mucous membrane of the larger and smaller tubes was pale, and there existed but little mucus in 2 cases, of which the mean period of death was the	17th day.
The mucous membrane was reddened, but the tubes free from increased amount of mucus in 4,	12 $\frac{3}{4}$ „
The mucous membrane was reddened, and the tubes filled with frothy mucus in 14,	12 $\frac{3}{4}$ „

The state of the lungs is reported in 27 cases.

They displayed no appearance of disease in 3 cases, of which the mean period of death was the	17th „
Slightly congested at the posterior parts in 5,	15 $\frac{2}{3}$ „
Much congested, and on section exuding much frothy mucus in 13,	11 $\frac{1}{3}$ „
One lung slightly, the other much congested in 4,	11 $\frac{3}{4}$ „
Affected with pneumonia 2,	14 „

The lungs were also emphysematous, in conjunction with one or other of the above conditions, in 6 cases.

The changes in the state of the respiratory organs must, therefore, be regarded as among the most constant morbid appearances in the bodies of persons dying of fever, the bronchi having displayed more or less injection of the mucous membrane, and increase of secretion in all but 2, and the lungs being congested or inflamed in all but 3.

Besides the two cases in which pneumonia is reported to have been found complicating the fever, a third case returned as fever, but in which the lungs were found intensely inflamed and gangrenous, without the roseolous eruption having been present on the skin, has been excluded from the calculation. Of the other two cases, the first occurred in a female 52 years of age, who took fever in March 1842, and died on the 14th day; the skin was covered with a copious febrile eruption, appearing at the ordinary period, and the symptoms during life were chiefly those of cerebral disorder. The bronchial mucous membrane was less reddened than usual after death from fever, but the tubes contained much muco-purulent secretion. The lower lobe of the left lung was passing from the stage of engorgement into that of purulent infiltration. It had a deep brown and almost gangrenous appearance, without, however, the foetor of gangrene; it was less solid than usual, but did not crepitate, and exuded, on compression, from the cut surfaces a dark viscid fluid mixed with pus.

The second case occurred in May. The patient, a man 28 years of age, was admitted on the 8th day of the disease, and

complained of pain, chiefly in the left temple; he had also cough and pain at the lower part of the sternum; the pulse was 112, soft, and small; the tongue furred and brown in the centre; the skin warm; the face livid, and the eyes suffused. The following night he was slightly delirious, and in the morning laboured under hurried respiration; the tongue was furred and parched, and the teeth covered with sordes; he was directed to have four ounces of wine daily. From this time the pulse was weak and intermittent; he was delirious at night, stupid but capable of being aroused; and the prostration of strength great. On the 12th day there is stated to have been a distinct eruption on the skin; but there is no report whether it faded on pressure, and of the time of its appearance; he became completely comatose on the 14th day, and died a few hours after.

The right lung adhered universally to the parietes by old cellular attachments; the anterior portion of its upper lobe was in the state of inflammatory condensation, and exuded pus on compression; the left lung was engorged posteriorly, but otherwise healthy. In the brain there existed slight sub-arachnoid effusion, and only one drachm of fluid in the ventricles, with a little at the base; the substance was firm.

In two cases in which the degree of congestion is stated to have been great, the posterior part of both lungs presented what has been termed the spleniform condensation, but the condensed portions floated in water. In one of them the patient during life had great lividity of countenance and laborious respiration; the other died a few hours after admission, and before any note was taken of his symptoms.

From the table given above, it will be apparent that the degree of pulmonary engorgement cannot be referred to the period of the disease at which death takes place; the lungs having been free from congestion or only slightly engorged, in eight cases of which the mean period of death was the 16th day; while they were much congested either on one side or on both in seventeen cases, of which the mean period of death was the 12th day. There is a more direct relation between the mode of death and the amount of congestion; the lungs having been generally much congested in those who had lingering deaths at early periods of the disease, and free from congestion in cases where sudden death occurred at advanced periods.

The Heart; and Condition of the Blood.—The heart was examined in twenty-eight cases, and was found free from structural disease in all but the six, in which there co-existed extensive emphysema of the lungs, in all of which the right ventricle displayed some degree of hypertrophy.

Its substance is stated to have retained its natural firmness in twelve cases, and to have been flaccid or very soft in seven.

In its cavities there were found clots more or less perfectly coagulated and decolorised in seven cases; coagula not decolorised in eight; and fluid or grumous blood, without any coagula, in six.

The condition of the blood in fever has not till recently attracted the attention which it demands; were it, indeed, carefully subjected to chemical analysis, there can be little doubt that it would present appreciable alterations in nearly all if not all cases of the disease; since its physical qualities present marked peculiarities in almost all examinations after death, at however early a period the fatal event may have occurred. On the other hand, I find, on referring to my notes, that of twenty-one cases of other diseases, taken indiscriminately, the blood in the heart was found fluid or feebly coagulated in only two; one being a case of purpura hæmorrhagia; the other of ulceration of the cartilages of the knee-joint with abscess, giving rise to typhoid symptoms. In four others there existed coagula, not decolorised, and in the remaining fifteen the blood was firmly coagulated and the clots decolorised.¹

Morbid Appearances in the Abdomen.—The Alimentary Canal.
—The alimentary canal was examined in 29 cases; of these the condition of the stomach is expressly reported in 19.

It is stated to have been free from any unusual appearance in	5 cases.
The mucous membrane more or less injected, but retaining its natural firmness in	10 "
" " but the consistence of the membrane not stated in	1 "
Softened and thin at the greater curvature in	2 "
Softened at the pylorus in	1 "
The duodenum was reported to have displayed no appearance of disease in	17 "
And the follicles of Brunner to have been unusually distinct in	2 "

The ilium cæcum and colon were examined and reported in 29 cases.

They presented no appearance of disease in	16 "
Displayed some reddening of the mucous membrane without impaired firmness in	8 "
Old ulcers were found in the ilium and colon in	2 "
Recent ulceration in	3 "

The elliptic plates were specially examined in 28 cases, and were regarded as diseased in only 3.

In 4 cases, entozoa were found in the large or small intestines.

From the above enumeration, it will be observed, that the mucous membrane of the stomach displayed more or less redness in different portions in 11 cases; in one only, however, was this redness extensive or intense, and in 3 it consisted rather of slight ecchymosis beneath the membrane. Redness of the mucous membranes cannot, however, alone be regarded as proof of inflamma-

¹ The latter cases included 6 of phthisis; 2 of small pox; 2 of injury of the head; 2 of pleurisy and pneumonia; and 1 each of bronchitis, scarlatina, aneurism of the aorta, gangrene of the leg, meningitis, glanders, and lumbar abscess.

tory action having been present, and, as in all but one of these cases, the membrane is reported to have retained its natural consistence, and in that instance the same may be inferred to have been the case, the organ may be regarded as having been healthy.

In the two cases in which the mucous membrane, at the greater *cul de sac*, was found thin and soft, it retained, in the rest of its extent, its natural consistence, and there existed no increased vascularity. The appearance was, therefore, most probably, traceable to the *post-mortem* softening, so frequent in this portion of the organ. In the case, however, in which there existed a softened surface near the pylorus, the change was evidently the result of disease, the membrane was thickened, of a pale rose tint, and so soft as to be removed in a pulpy state by pressure with the back of the scalpel; the softening was somewhat circumscribed. This appearance was found in the body of a female who died of ulcerative perforation of the ilium, and in whom tenderness in the epigastrium, and urgent vomiting were present throughout the disease.

In the duodenum the only morbid appearance was unusual distinctness of the glands of Brunner in two cases; in one of these no symptoms referable to the alimentary canal were present, in the other the patient died of the follicular disease of the small intestines.

In 8 out of the 29 cases, in which there existed no other disease of the ilium, cœcum, and colon, there was found more or less injection of the vessels of the mucous membrane and sub-mucous cellular tissue. In these the redness chiefly occupied the lower portion of the ilium, cœcum, or other dependent portion of the canal, and being unattended with any loss of firmness, was regarded as passive; in one case there existed a slight red pointing of the *valvulæ conniventes*, the rest of the membrane retaining its usual ash colour.

In one of the two cases in which there existed old ulceration, there was found a solitary ulcer in the ilium, of small size with firm edges; it had a purple colour, and presented no appearance of recent disease. The plates of Peyer in the ilium were pale, and depressed below the level of the adjacent membrane, the solitary follicles could not be traced, and the mesenteric glands were of their natural size. In the other case the ulcers were seated in the *caput cœci*, and were evidently healing, being of small size, and having depressed and slightly reddened edges; the mucous membrane around displayed cicatrices of old ulcers; and the plates, though distinct and slightly elevated, presented no unusual appearance. In these cases the patients died on the 20th and 12th days; no report of the previous state of health of either was obtained. The former patient, when ad-

mitted, was much collapsed, and died shortly after; in the latter case there was at first a confined state of the bowels, and diarrhoea came on a day or two before death.

Condition of the Elliptic Plates.—The aggregate follicles, constituting the Elliptic Plates in the small intestines, were found diseased in 3 out of the 29 cases examined; of the remaining 26 their condition was reported in 25.

	Mean age.	Oldest.	Youngest.
They were indistinctly defined or scarcely traceable in 4 cases,	40 $\frac{3}{4}$	52	28
Distinctly defined but not elevated in 14,	35 $\frac{1}{3}$	45	27
Distinctly defined and more or less elevated in 7,	31 $\frac{1}{7}$	51	11
Elevated and ulcerated in 3,	16 $\frac{2}{3}$	22	7

In the cases where the plates were distinctly marked, they displayed various shades of the usual ash-grey colour of the intestinal mucous membrane, and their surfaces were marked by numerous dark lines or spots in the interspaces between the follicular bodies. The degree of elevation was, in all cases, so slight as only to be detected on careful examination, and was chiefly found on the plates near the cœcum; and the mucous membrane on their surface and around displayed no redness or alteration in consistence. With a view to ascertain how far these characters correspond with those presented by the plates after death from other diseases, I have carefully noted their appearance in a considerable number of affections in which the intestinal canal was apparently free from disease, and find that, in 32 of these cases¹ taken indiscriminately, they are reported to have been only

	Mean age.	Oldest.	Youngest.
Detectable on careful examination in 5 cases,	47	65	23
Indistinctly defined in 4,	29 $\frac{3}{4}$	41	24
Distinctly defined but not elevated in 6,	36 $\frac{5}{6}$	57	30
Distinctly defined and elevated in 17,	38 $\frac{1}{3}$	56	20

In such of these cases as displayed the plates distinctly, their general appearance resembled that just described; where there existed elevations of their surface, it was only very slightly and in the neighbourhood of the cœcum, and they were, in most cases, equally marked by the dark lines.

On comparing the above table with the former one, of the condition of the plates in fever, they would appear in the latter

¹ These included 3 cases of apoplexy, 3 of bronchitis, 3 of delirium tremens, 3 of pneumonia and pericarditis, 2 of phthisis, 2 of morbus cordis, 2 of diseases of the kidneys, 2 of variola, and 1 each of gangrene of the leg, syphilis, asphyxia, purpura, caries of the sternum, tetanus, chronic pleurisy, injury of the head, disease of the liver, aneurism of the aorta, hematemesis, and injury of the thorax.

disease to have been somewhat more frequently found distinctly defined than in the other cases; on analysing these, however, it appears that there existed a considerable difference between the distinctness of definition in cases of acute and chronic disease. Thus, of the 23 in which the patches are represented to have been distinctly defined and more or less elevated, 18 were cases of short duration, none having existed longer than three weeks, and only 5 were of old standing; while, of the remaining 9, in which they were scarcely traceable, or indistinctly defined, 7 were cases of chronic and only 2 of acute disease; the latter being old persons, 60 and 65 years of age, in whom the glandular structure is always less distinct. It becomes, therefore, necessary to compare the degree of development of the plates in fever with their appearance in such diseases only as are of short duration; and, on instituting this comparison, it appears that while, in the former disease, they were distinct in 21 out of 25 cases, in the latter they presented the same character in 18 out of 20 cases. From the calculation in the latter table, all cases under 20 years of age were excluded, while amongst those cases of fever in which the plates were distinctly defined and slightly elevated, are included two in persons 17 and 11 years of age; and it is well known that, in the young, the follicular structure is more distinctly marked than in advanced life. It is therefore apparent, that in by far the largest proportion of cases of fever in this locality, the elliptic plates are not only not affected by disease, but are found less distinctly marked and less elevated than in persons dying of other diseases of a similar duration.

Intestinal Disease.—Of the 3 cases in which the mucons glands were found in a state of recent and active disease, the mean period of death was later than of the rest of those examined,—having been the 16th day; the *late* period of death will not, however, afford any explanation of the occurrence of this complication,—two of the cases having terminated at early periods of the disease, viz., on the 13th and 16th days; while the mean duration of the 4 cases in which the plates were very indistinctly traceable, was also the 15th day; and of 5 in which death took place between the 16th and 21st days, the elliptical patches were very indistinctly defined in one,—distinctly defined, but not in any degree elevated in 3,—and distinct and slightly elevated, but only in the extremity of the ilium, in the 5th. None of the cases of intestinal disease are reported to have presented any eruption on the skin; and all occurred in females and in persons in early life. None of the patients had been long residents in Edinburgh; one was admitted from North Leith and had left Ireland shortly before; of the other two admitted from Edinburgh, one had come, only four days before her seizure, from Prestonpans; the other had resided on the opposite coast of Fifeshire till shortly before her admis-

sion; the same remark applies also to a case which has occurred since the date of the report,—the patient, a sailor, was taken ill at Leith, but had sailed only four days before from Newcastle, to which port he had just returned from the Baltic. The disease has thus, it will be observed, appeared under similar circumstances to the cases examined by Dr Reid.

In one of these cases the aggregate and solitary glands were found enlarged, elevated, and much thickened, and in some places covered by a dark layer of sloughy membrane, in others displaying commencing ulceration. In the other cases the enlargement and thickening of the plates were not conspicuous, but they were deeply ulcerated, and both proved fatal, by perforation of the intestinal tunics and peritonitis, occasioned in one by the extension of the ulceration, in the other by sloughing. These cases I shall give more in detail.

Margaret Reay, aged twenty-two, admitted July 15th, 1842, from Hellesfield, where she had been working in the gardens for some few weeks, before which she had come from Ireland. She was seized twelve days before her admission with symptoms of fever, but had been confined to bed only five. She complained of pain in the head and abdomen; the right iliac fossa was hard and tender; the skin was hot and dry; the tongue brown and dry in the centre, and moist at the edges; the pulse 100; and the bowels confined. Six ounces of wine were directed to be given to her during the day, the bowels to be relieved by a purgative powder, and eight leeches to be applied to the right iliac fossa.

18th. The powder had produced several watery evacuations; she had still headache; the skin was warm and moist in the morning, but became dry at noon; the tongue was moist at the sides, dry and brown in the centre; the pulse 100, and feeble.

19th. A blister was applied to the scalp in consequence of the continued headache; the skin was moderately warm, and the pulse 104. She was suffering from nausea and vomiting.

20th. The diarrhoea caused by the purgative medicine had never ceased, and was more urgent; the prostration of strength was great, respiration laborious, and the teeth and lips covered with brown sordes.

21st. She suffered from urgent vomiting; the skin was hot and harsh; the mouth much parched and encrusted with sordes; the expression of countenance heavy and languid; and the pulse 112, weak, and unequal: the abdomen was tense, but not tender, and the diarrhoea less urgent; she had some cough.

22d. Had been much disturbed during the night with hiccup, and had vomited slightly; she moaned incessantly, but was not delirious; from this time she sank, becoming comatose, and died at 2 P.M., on the 23d.

No eruption was observed on the skin during her attack, and

her sister, who was seized at the same time, and recovered after protracted fever, had also no eruption in the skin.

Sectio, July 25th.—The peritoneal covering of the small intestine, near the cœcum, displayed marks of inflammation; and on laying open the canal, the solitary glands were found enlarged, and their edges everted throughout the whole of the ilium and the colon. About the middle of the ilium the plates of Peyer began to be similarly affected. They presented rough irregular surfaces, much elevated above the adjacent mucous membrane. In the last six inches of the small intestine the whole canal was covered with masses of this description. Some of the plates were elevated two to four lines, and were covered with a dark irregular membrane, resembling a slough, and in other places the surfaces of the plates were pierced by small points of ulceration, and their edges everted. Beneath some there was found a yellowish substance, and the submucous cellular tissue was thickened and condensed. The mucous membrane around the plates was of a light rose colour, but not apparently much diseased. The mesenteric glands were enlarged, varying from one-fourth to three-fourths of an inch in length; they were spongy and vascular, and the serous membrane over them was finely injected with red vessels. The colon was healthy, with the exception of its follicles being enlarged; and the duodenum and jejunum were also found free from disease; the glands of Brunner being however distinct in the former. The mucous membrane of the stomach was generally of a pale rose tint, and at the greater curvature was thin and softened, probably from the action of the gastric juice; the liver, spleen, and kidneys, were healthy; the lungs were slightly engorged posteriorly by fluid blood; the heart firm; no effusion was found beneath the arachnoid or in the ventricles, and but little at the base; the brain was healthy.

This case affords an example of the second form of disease of the elliptic plates, as described by M. Louis. Their great elevation and enlargement, and the thickening and condensation of the submucous cellular tissue, renders it probable that the disease may have commenced beneath the mucous membrane, and have involved that tissue secondarily. The following cases are examples of M. Louis's first form of the disease. The ulceration appears to have commenced on the surface of the mucous membrane, and to have gradually eroded the other tissues.

2. Alice Spottiswood, aged 21, admitted March 27, 1842, from Edinburgh, but a short time previously resided in Fifeshire. Ten days before her admission, she was seized with vomiting and pain at the epigastrium. She had also frontal headache, and much prostration of strength, followed by pain in the back and limbs. The vomiting continued after all ingesta. At first the matters vomited were of a bilious appearance; but had latterly been

tinged with blood. When admitted, these symptoms were still present; the tongue was white, and somewhat foul in the centre, and red at the tip and edges; the pulse was 100, and of moderate strength; the countenance oppressed; the skin hot; and she had urgent thirst. Leeches were directed to be applied to the abdomen; and calomel and opium were prescribed. By these means she obtained some relief; the pulse fell to 90, but was feeble; the tongue continued foul, but was less red at the tip and edges; and on the morning of the 30th, she was free from pain, and had passed a tolerably comfortable night; on making some exertion in the bed, the pain suddenly recurred; she became incapable of bearing the slightest pressure on the abdomen, which was very tympanitic, and the respiration became entirely thoracic; the pulse rose to 128; the tongue became dryer and redder than before, and urgent vomiting came on; she was bled to 12 ounces, and took a large dose of opium. The bleeding was attended with temporary relief; the pulse, however, rose after it to 132; the bowels were confined, and a simple enema was administered. On the morning of the 1st of April, the abdominal tenderness was increased, and leeches were again applied to the right iliac fossa, in which situation the pain was most severe; in the evening she vomited a dark fluid, resembling coffee grounds, and died at 1 P.M. on the 2d.

Sectio, April 4.—The parietal portion of the peritoneum adhered loosely to the omentum, and the abdominal cavity contained a quantity of opaque yellow serum, with flocculent masses of lymph floating in it. The omentum adhered to the anterior surface of the intestines, and their convolutions were closely matted together. About two inches from the cœcum, the ilium was of a deep brown hue, and in the centre of this discoloured portion there existed an opening about the size of a split pea. This was found, on laying open the canal, to correspond to the base of a large irregular-shaped ulcer on one of the elliptic plates. Another of the plates nearer the cœcum was also found extensively ulcerated, and the three or four above it were similarly affected. The solitary glands in the lower portion of the ilium were ulcerated, and one of these ulcers, situated about eight inches above the former opening, had also perforated the tunics.

The rest of the plates in the small intestine were distinct, but only slightly elevated; their covering of mucous membrane was not reddened, though, perhaps, softer than usual; and the adjacent membrane was also softer, though not more injected; the large intestine was throughout natural, and no disease was detected in the jejunum and duodenum; the stomach displayed a tolerably circumscribed softening at the pyloric end; the membrane was thickened, of a light rose colour, and perfectly pulpy;

the rest of the mucous membrane was free from injection, and firm; the other organs in the chest and abdomen were healthy.

3. Euphemia Thomson, a child 7 years of age, was admitted from the House of Refuge on the 27th of November, 1841. She had been received into that institution from Prestonpans on the 13th, and was taken ill about four days after her arrival. When admitted into the Infirmary, she was almost moribund; the abdomen extremely tender, and very tympanitic; the tongue dry, and covered with a white fur; the pulse very quick and feeble, and the bowels confined. She died on the morning of the 30th of November.

On examination, there were found marks of intense inflammation of the peritoneum,—that membrane being covered by a layer of soft lymph, while the cavity contained an opaque yellow serum, mixed with the intestinal contents. On laying open the canal, the solitary and aggregate glands were found ulcerated, and on one of the plates, about nine inches from the cœcum, there was found a small slough, involving the whole of the tunics of the intestine, by which the perforation had been produced,—the slough remaining attached only on one side. The diseased plates extended from 18 to 20 inches above the cœcum, and the solitary glands continued enlarged and ulcerated to the ascending colon; the plates presented little elevation above the mucous membrane around, but were studded with small points of ulceration; the rest of the mucous membrane was little affected; the mesenteric glands were enlarged; the jejunum, duodenum, stomach, and lower portion of the colon, were free from appearance of disease, as were also the other abdominal and thoracic viscera.

In this case, the patient laboured under symptoms of peritoneal inflammation when admitted, and the period at which the perforation took place was not ascertained. The patient sank probably on the 13th day. In the former case, the 13th day was distinctly marked as the time at which the perforation occurred, and death ensued about 72 hours after. In each of these cases, the aggregate glands in the lower portion of the ilium, and the solitary follicles in the ilium, and a larger or smaller portion of the colon, were found diseased, while the interposed mucous membrane appeared little altered in colour, though somewhat softened.

Entozoa.—The only other appearance observed in the alimentary canal, was the presence of entozoa in five cases. A lumbricus was found in the small intestines of a man 44 years of age, and tricocephali in females 22, 31, and 52 years of age, and in a man of 34. The latter were in each case imbedded in the mucus of the cœcum. In one of the cases, the solitary and aggregated glands were diseased; in another there existed an old ulcer in the cœcum, and in the other two, the mucous membrane was much reddened, but its

firmness not impaired. These cases occurred in the months of March, May, July, and August. It is, however, probable, that more careful examination would have detected them in other cases, since after being once found, I have met with them frequently, probably in one out of every five or six cases of different diseases. Once only were any found in the small intestine, and in this they existed also in the cœcum; they have twice occurred five or six in number, in one instance in a case of fever, in the other, of acute mucous enteritis after amputation of the thigh: they have occurred, however, as often in diseases not febrile as in fever, and cannot, therefore, be regarded as concerned in the production of the symptoms, though from the reddening of the membrane, and the redundant secretion of mucous, they doubtless give rise to irritation.

Spleen.—Of all the organs contained in the abdominal cavity, the spleen displayed the most frequent morbid changes.

Of 22 cases, in which its state is reported, it was found natural as to firmness in 7, or $\frac{1}{3}$ d nearly.

Flaccid, or slightly softened, in 5, or $\frac{1}{4}$ th „

Softened so as to exude on compression a thick pulp, in 5, or $\frac{1}{4}$ th „

A mere sac containing a grumous fluid, in 5, or $\frac{1}{4}$ th „

In most of these cases the organ was weighed, and though it was usually enlarged when softened, in none did its weight exceed 12 ounces. The period of death in the cases in which the organ was found softened, did not materially differ from that of the other cases.

The condition of the spleen as to consistence corresponds to a certain degree with the state of the blood in the large vessels; this correspondence is not, however, so constant as to warrant our concluding with M. Andral, that the consistence of the spleen is directly referable to the crisis of the blood contained in its cells. Thus, of five cases in which its firmness was natural, the cavities of the heart contained in three firm, and more or less decolorized coagula, and in the others, there existed coagula, not, however, decolorized,—while, of 12 cases in which the organ displayed different degrees of softening, the blood in the heart was fluid in six cases; coagulated, but not decolorized in three; and decolorized in three, the spleen being in one of the last cases a mere bag of fluid. The degree of firmness of the spleen was generally in relation with that of the other organs; thus, in all the cases in which it was firm, the heart also is stated to have been so; and in six out of nine cases in which its consistence was impaired, the substance of the heart was flaccid.

This softening, whether in fever or other diseases, cannot be ascribed to incipient putrefaction alone, since, in two or three cases, where the rest of the organs in the body were in an advan-

ced stage of decomposition, the firmness of the spleen was found unimpaired. In two or three cases of different diseases, the softening was confined to the concavity of the organ, or was most marked in that situation, this being probably owing to the action of the gastric juice which had exuded through the tissues of the stomach after death, as it co-existed with softening and thinning of the mucous membrane at the greater *cul de sac*. Whatever view may, however, be adopted to explain this peculiarity, whether it be ascribed to *post-mortem* change, or be regarded as the direct result of diseased action, the softening is of much more frequent occurrence in cases of fever than of other diseases; thus, of 58 acute and chronic cases, taken as they occur in the Register of Dissections, and in which the organ was otherwise healthy, the spleen was found firm in 43, or $\frac{3}{4}$ ths. Flaccid, or slightly softened, in 11, or $\frac{1}{5}$ th. and becoming pultaceous on compression, in 4, or $\frac{1}{15}$ th.: or, otherwise, while in fever the spleen was more or less softened in nearly $\frac{3}{4}$ ths of the cases; in other diseases, its consistence was impaired in only $\frac{1}{4}$ th, and the softening, in the latter cases, was to a much less degree.

Kidneys.—In nearly all the cases in which the abdominal organs were examined, the kidneys are reported, they were usually flaccid and tinged with blood; and in some cases the membrane of the pelvis was injected, and displayed minute ecchymosis.

Liver.—The liver was also usually found flaccid, and the bile in the gall-bladder copious. In one case in which the patient died on the 8th day much jaundiced, the ducts were found throughout pervious; the liver displayed some old thickening of its serous covering, but was otherwise healthy and free from congestion; the duodenum was healthy, and no other abnormal appearance was detected, but thinness and paleness of the biliary secretion. The case was characterized by active delirium and tremor, and terminated by coma.

From the above analysis, it will be apparent that the general results correspond closely with those of Dr Reid. Pneumonia, which, during the period included in his last report, occurred in 11 out of 88 cases, has, however, been found much less frequently during the last year, or in only two cases out of the 27 examined. The disease of the mucous glands of the intestines has, on the contrary, occurred in a somewhat larger proportion of cases, in 3 out of 29 cases, or in 1 out of 9 $\frac{2}{3}$ ds, while Dr Reid met with it only 8 times out of 132 cases, or in 1 out of 16 $\frac{1}{4}$ th. In other respects, the results are similar, and display the same want of constant and sufficient morbid appearances after death, to account for the phenomena which were present during life.

